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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,700	08/05/2003	Sang-On Choi	277/024	7617

7590 12/14/2004

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EXAMINER	
TAYLOR, VICTOR J	
ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/633,700	CHOI ET AL.	
	Examiner	Art Unit	
	Victor J. Taylor	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☒ Claim(s) *7-9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *office action*.

DETAILED ACTION

Drawings

1. The drawings were received on August 05, 2003. These drawings are approved.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipative by Zhou et al., in U. S. Patent 6,813,584.

With regard to claim 1, Zhou et al., discloses a system and method for determination of azimuth attitude using triaxial axis magnetometer sensors and inclinometers in figure 1 and figure 3.

Zhou et al., further discloses the earth magnetic sensor in figure 1 mounted on the device b in figure 2 for measuring the axis magnetic field a in figure 2.

Zhou et al., further discloses the inclinometer for calculating roll and pitch angles in figure 1.

Zhou et al., further discloses the signal conditioning A/D circuit in figure 3 with the sensors connected.

Zhou et al., further discloses the microprocessor for calculating the sensor inputs.

Zhou et al., further discloses the RS-232 serial out put circuits for transmitting the data processed to the microprocessor.

Zhou et al., further discloses the PC that disclose a plurality of display devices as well as LCD modules and monitors for display in figure 3.

Zhou et al., in addition further discloses the software flow chart in figure 4 and describes the processing of the various components in lines 1-25 of column 7.

As to claim 2, Zhou et al., discloses details of calculating the azimuth angle using the equations in lines 1-40 of column 4 and discloses the magnetometers in line 45 of column 4.

As to claim 3, Zhou et al., discloses the accelerometers in line 56 of column 4.

As to claim 4, Zhou et al., discloses details of calculating an azimuth angle in lines 45-65 of column 6.

As to claim 5, Zhou et al., discloses the processor PC in figure 3 and discloses the microprocessor in line 64 of column 6 which would comprise the CPU, various registers for storing and shifting digital data with math unit that include ALU and floating point unit with clock timer and other timing devices commonly found in the computer agriculture.

With regard to claim 6, Zhou et al., further discloses setting a data output using the internal timers in the microprocessor found in the computer in figure 3.

Zhou et al., further discloses converting the analog signals from the sensors in the ADC circuits of figure 4.

Zhou et al., further discloses the microprocessor sending serial data to the PC, which has storage devices of ram and hard storage capable of storing the data.

Zhou et al., further discloses calculating the attitude and obtaining a coordinate conversion matrix obtained from the inclinometer in figure 1 using the PC processing of figure 4 and discloses coordinate heading in lines 50-65 of column 2.

Zhou et al., further discloses generating the Z-axis earth magnetic data using the sensors in figure 1 and calculates magnetic heading data in lines 4-40 of column 5.

Zhou et al., further discloses calculating the earth magnetic data using the three axis sensors and discloses the steps for calculating the azimuth angles and uses timer interrupt in the computer program with steps of using the ADC and calculates azimuth angles for display in the computer monitor system using the equations and processes and equipment found in lines 1-65 of columns 2-8.

Allowable Subject Matter

5. Claims 7-9 are objected to as being dependent upon rejected base claim 6, and include the method steps for processing the sensor data using the conversion matrix but would be allowable if rewritten in independent form including all of the limitations of the base claim 6 and any intervening claims.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor J. Taylor whose telephone number is 571-272-2281. The examiner can normally be reached on 8:00 to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on 571-272-2863. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VJT
10 December 2004

John Barlow
Supervisory Patent Examiner
Technology Center 2800